

Abstract of the Disclosure

Method and apparatus for creating a gaseous mixture containing controlled amounts of hydrogen and carbon monoxide. Hydrogen and carbon monoxide are produced through partial catalytic oxidation reactions between hydrocarbons and oxygen. The oxidation takes place in a reactor at a temperature of less than 1200°C and at a pressure between 3 bar and 20 bar. A gas mixture of hydrogen and some carbon monoxide is then recovered from the oxidation. This mixture is transferred to a cooling chamber where it is cooled, by direct contact with pressurized water, to a temperature between -20 °C and 80 °C. The cooled gas is also at a pressure between 3 bar and 20 bar. The cooling chamber and the reactor are both located in the same vessel, such that the gas transport time between the two is less than 50 milliseconds.